System Analysis and Design on The Grand Hotels, Mysore

Vaibhav Datta (300206527)

University of the Fraser Valley, Canada

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Prof. Anoop Saxena

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Executive Summary:

Grand Hospitality Suite (GHS) provides a comprehensive solution to The Grand Hotels Group's core difficulties in reservation management, customer relationship management, inventory control, financial management, and staff management. GHS provides a centralised platform that simplifies operations, lowers manual work, and -minimizes errors, resulting in greater efficiency and cost savings. Furthermore, the integration of modules such as reservation management, CRM, inventory management, financial management, and staff management by offering personalized services, optimizing resource utilization, and increasing staff efficiency. With GHS, The Grand Hotels group can increase its competitiveness in the hospitality business, create client loyalty, and facilitate long-term growth.

Mission:

Our mission is to optimize processes and improve the quality of service for guests by implementing the Grand Hospitality Suite in a streamlined manner, thereby strengthening The Grand Hotels' competitive advantage in the hospitality industry.

Vision:

Grand Hotels Mysore perceives itself as the preeminent destination for luxury hospitality in Mysore and beyond. We want to set the bar for quality in service, innovation, and sustainability in the hotel sector. The objective is to consistently improve the visitor experience by providing exceptional lodgings, personalized service, and unique cultural immersion opportunities. Our team want to be a light of hospitality, where every guest feels valued, inspired, and ready to return.

Background:

The Grand Hotels group, known for its luxurious suites and great service, is facing operational challenges due to manual management systems throughout its hotels. With an expanding clientele and portfolio, the requirement for a centralized solution to streamline operations and improve guest experiences has become critical. Thus, the decision was made to adopt the **Grand Hospitality Suite (GHS)**, with the goal of revolutionizing their operating framework and maintaining their competitive advantage in the changing hospitality market.

Problem:

Manual management of reservations, customer relationships, inventory, finances, and staff across The Grand Hotels group poses significant challenges. It is time-consuming, error-prone, and lacks centralized control, leading to inefficiencies and potential service disruptions.

Solution:

The implementation of the Grand Hospitality Suite (GHS) provides a comprehensive answer to these difficulties. GHS incorporates modules for reservation, customer interaction, inventory, finance, and personnel management to streamline operations and improve visitor experience. With real-time data updates, automated processes, and centralized control, GHS assures efficiency, accuracy, and higher service quality across The Grand Hotels group.

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Business and Client:

About The Grand Hotels, Mysore:

A well-known elite hotel with brilliant architecture and interesting history is the Grand Hotel also referred to as "**Grand Mercure Mysuru**" is situated in the heart of Mysore, India. The legacy is taken care of by a very dedicated team of staff who are passionate about providing customers with a remarkable experience rich in tradition and hospitality.

The hotel offers several luxurious accommodations like well-appointed rooms and suites that are designed to satisfy the demands of both business and leisure guests. The Grand Hotel has hosted numerous renowned personalities like members of the royal family, political leaders, and celebrities from around the world. Over the years, this hotel has undergone certain changes. Due to its increasing volume of operations, The Grand Hotel has decided to upgrade its accounting management system.

Company's Mission:

Grand Hotels Mysore's objective is to create great hospitality experiences that meet or surpass our customers' expectations. They are committed to providing exceptional service, exquisite accommodations, and unique dining experiences, all set against the gorgeous backdrop of Mysore's rich culture and tradition. The aim is to create an atmosphere of warmth, elegance, and genuine care, so that each guest departs with fond memories and a wish to return.

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Project Origin and Need

Current Scenario:

In the sector of hospitality, The Grand Hotel in Mysuru (Mysore) holds a brilliant reputation that is due to its long history and consistent dedication to its work. In the meantime, recognizing the current situation demands a strategic approach. According to an operational perspective, the hotel's situation is dynamic, influenced by several variables like market conditions, legal restrictions, and events like the COVID-19 situation. The business performance additionally provides valuable information on income production, occupancy rates, and visitor satisfaction among other critical factors for evaluating a company's competitive status.

In addition, the earlier accounting system poses some issues such as keeping track of accounts payable and receivables, maintaining consistency and having accurate analysis and reporting methods.

Project Requirements:

1.) Billing Details:

The details consist of financial information on the payments made by guests. This includes the cost of accommodation, extra necessities like spa treatments, taxes, deals, and mode of payment. The system should keep track of payments and balances as well as offer accurate bills and invoices for visitors.

2.) Staff Information:

Details about hotel workers like front desk staff, housekeeping staff, and management should be stored in the system. This information is significant for effectively handling responsibilities and taking care of employee salaries.

3.) Inventory Management:

The system should be able to oversee inventory for different hotel services and facilities in addition to guest-related data. This involves maintaining an eye on the supply of goods like restaurant supplies, toiletries, etc. Effective inventory management ensures that the hotel quickly and efficiently satisfies the demands of the guests.

4.) Reporting and Analytics:

The system should provide reporting and analytics features to offer accurate knowledge about hotel performance and trends. This includes reports on revenues, occupancy rates, and guest satisfaction ratings. The hotel management can optimize operations and make appropriate choices with the help of analytical tools.

5.) Regulatory:

Concerning rules and regulations, GDPR and CCPA are crucial. The system should protect the processing and storage of visitors' data which include functions like data encryption and access control to maintain legal compliance.

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Project Location, Deadline and Costs

Project Location

Mysore, India

Deadline

7 Months (1st March 2024 - 1st September 2024) + 1 Month Buffer

Budget

2 Crore INR (Project Cost of 1.7 Cr +Additional durational cost of 30 lakhs).

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SWOT Analysis

Strengths

1. **Location:** The Grand Hotel is often praised for its prime location in Mysuru (Mysore), offering easy access to major attractions such as Mysuru (Mysore) Palace, Chamundi Hill, and Mysuru (Mysore) Zoo.
2. **Heritage and Charm:** Many guests appreciate the hotel's historic ambiance and architectural charm, which often reflect the cultural heritage of Mysuru (Mysore).
3. **Amenities:** The hotel may offer a range of amenities such as spacious rooms, dining options, swimming pools, spa services, and event facilities, enhancing the overall guest experience.
4. **Customer Service:** Positive reviews often highlight the friendly and helpful staff members who strive to provide attentive service to guests.
5. **Cultural Experience:** The hotel may offer cultural programs, performances, or workshops that provide guests with an immersive experience of Mysore's rich heritage.

Weaknesses

1. **Maintenance:** Some guests may report issues with the maintenance of the property, including outdated decor, worn furnishings, or facilities in need of repair.
2. **Noise Levels:** Depending on the location within the hotel or nearby surroundings, guests may experience disturbances from street noise, neighboring rooms, or events hosted at the hotel.
3. **Pricing:** The cost of accommodation and amenities at The Grand Hotel may be perceived as high compared to similar options in the area, potentially affecting the value proposition for some guests.
4. **Dining Options:** While the hotel may offer dining facilities, the variety and quality of food and beverages may not always meet the expectations of all guests.
5. **Accessibility:** Some guests may find issues with accessibility within the hotel, such as limited elevator access or challenges for guests with mobility impairments due to architectural barriers.

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Opportunities

Tourism Growth: Mysore's attractions are drawing more tourists. The hotel can increase marketing efforts and offer tailored packages to capitalize on this trend.

Event Hosting: Mysore is popular for hosting festivals, weddings, and business meetings. By providing event spaces and services, the hotel can enhance its reputation as a top event location.

Business Travel: With Mysore's rising economic activity, there is a growing demand for business services. The hotel can cater to this market by offering cutting-edge conference facilities and services tailored to business travellers' needs.

Digital Presence: By improving its online presence through social media campaigns and online promotions, the hotel can reach a larger audience and attract more visitors.

Collaborations: Partnering with local businesses, event organizers, and tourist agencies can help the hotel tap into new markets and attract more guests.

Threats

Natural Disasters: Mysore is prone to natural disasters like earthquakes and floods, which can disrupt hotel operations. To mitigate this risk, the hotel should implement effective disaster response plans and invest in infrastructure upgrades for increased resilience.

Competition: The hotel faces strong competition in Mysore's hospitality sector, which can impact its profitability and customer loyalty. To differentiate itself, the hotel can offer unique features, personalized services, and innovative experiences.

Regulatory Changes: Changes in laws and regulations affecting labour, tourism, or hospitality can impact the hotel's operations and profitability. To adapt, the hotel should stay informed about regulatory changes and adjust its business strategies accordingly.

Economic Instability: Fluctuations in the economy can affect travel patterns and consumer spending, potentially reducing the number of guests and revenue for the hotel.

Technology Disruption: Rapid advancements in technology can change customer expectations and industry standards, requiring the hotel to invest in new technologies to stay competitive.

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Methodology

According to the type of project, the design and analysis team has decided to opt for **Scrum methodology**, which is a part of **Agile framework**. The hotel accounting software requires constant evaluation, testing and feedback. Since, this is a major project for The Grand Hotel, Mysore due to the involvement of the hotel accounting system, it is imperative that the system is consistent and devoid of any errors that may arise in its working.

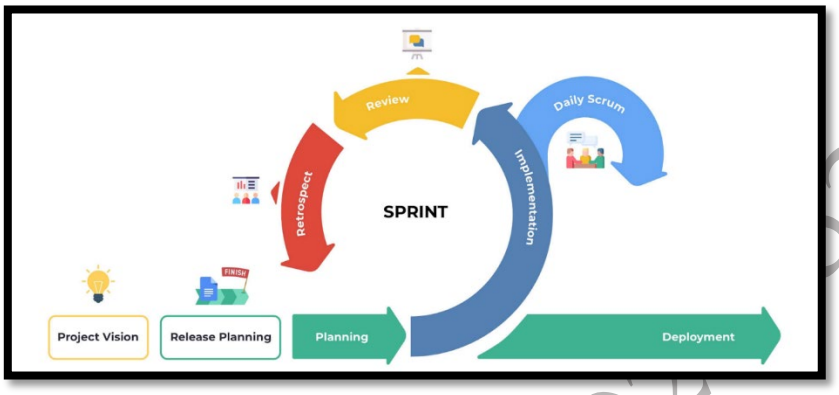

Figure 1: Scrum Process

Scrum is a flexible framework which is iterative in nature because it divides a large complex task into small manageable deliverables, which are known as sprints. Each sprint lasts for about 2 to 4 weeks. At the end of each sprint, a small potentially shippable product is produced. This is tested and if there is any error or inconsistency, it can be easily resolved.

Process of Scrum:

1. **Creation of Product Backlog**

   At this stage the product (or software) requirements, features and functionality are identified by the Product Owner. Then these are arranged based on their priority and importance in the system development process. The following will be included in the Product Backlog:

   - **Accounting –** accounts payable and receivable, ledger, reporting.
   - **Billing –** invoices, payments, refunds, taxes, and additional charges.
   - **User Information –** permissions and accessibility of hotel employees, including authorization and control over different data of the accounting system.
   - **Budget and Analysis –** creating budget for the hotel for a certain period, storing information related to usage of funds and conducting forecasts based on previous data.
   - **Inventory Management –** keeping track of stock such as food items, hotel essentials, etc., ensuring timely availability of items.
   - **Integration –** connecting the new customized hotel accounting system to other currently operational systems like, point of sale (POS), property management and others.
   - **Training and Support –** this involves the period related to training employees to use and get familiar with the new system.

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2. **Sprint Planning** In this phase, the project management team holds discussions and meetings to decide the goals and objectives at the start of a scrum. Highest priority tasks are identified from the previous step and a plan is made accordingly for the accounting system.
3. **Daily Scrum –** This involves conducting regular meetings to decide what was done previously, different tasks assigned for the current day, and resolving any issues and obstacles faced during the same.
   For example, if there is an issue with the general ledges or financial statements, the accounts receivable and accounts payable will be checked for inconsistencies that may have caused this problem.
4. **Sprint Review –** Once a deliverable is completed, it sent for review by the Product Owner and stakeholders (management, staff, customers, etc.) to obtain feedback. If an issue is encountered, it is conveyed to the project manager and the development team and accordingly, updates and changes are made to the product backlog, defining the next scrum.
   For example, if the developed billing system is glitching, then the inconsistencies will be identified to take care of the problem by analysing this part of the accounting system, rather than checking the entire hotel accounting software.
5. **Sprint Retrospective –** This is an essential step of the Scrum process. The scrum team observes and inspects different processes performed in the previous sprint and accordingly, the next sprint process is adjusted to ensure a better understanding of the system.
6. **Backlog Refinement –** This process involves consistent and regular refinement of the Product Backlog so that the process involved in the upcoming sprints are conducted flawlessly without much deviation or complaints.

Scrum Roles and Responsibilities

1. **Product Owner (PO) –** The product owner defines and manages the Product Backlog and acts as a representative of stakeholders involved in the project design and analysis. Every item is prioritized in the Product Backlog based on the requirements of the business and stakeholders. It is an important job of the Product Owner to ensure that the Product Backlog is up to date and consistent with the project.
2. **Scrum Master (SM) –** The duties of a scrum master are to ensure that each scrum is carried out in the specified time frame, the objective is being achieved (in case of any deviations, proper countermeasures are taken) and the rules and procedures of the planned scrum are being followed by the team.
3. **Scrum Team –** The professional team consisting of members having expertise and certain set of skills required for the process. The scrum team jointly collaborates to complete each scrum and carry out tasks, identifying goals and objectives.

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System Requirements

Hardware:

1. **Server Hardware:**
   A high-performance server that can manage multiple connections at once and handle large amounts of data. It has adequate RAM starting at 16GB and adjusts according to the requirements to manage the workload efficiently. SSD-based storage for faster data access. Multi-core processors preferred, such as Intel Xenon, for better parallel processing.

2. **Networking Infrastructure:**
   Enough bandwidth to manage the flow of data between client and server, along with the installation of switches, routers and firewall for better communication and security.

3. **Client Hardware:**
   Laptop computers with recent specifications that are available for desktop clients (modern processors and higher RAM).

   Support a range of mobile devices like Android, iOS, etc.

4. **Peripherals:**
   Printers are used to produce bills, reports, and other paperwork. Barcode scanners and other tools are used for managing inventories and guests checking- in details.

Software:

1. **Operating Systems:**
   Server – Windows Server 2019 or above.

   Client – Ensures compatibility with majority of browsers: Windows, macOS, iOS or Android.

2. **Database Management Systems (DBMS):**
   A flexible and secure database management system for storing and managing data. Using MySQL, it is easier to organize and manage relational databases. Also, it is easily scalable and thus, will incorporate The Grand Hotel's future needs.

3. **Middleware:**
   The components of middleware are used to connect various hotel software modules like booking, payment, and managing inventory. Messaging systems offer automatic interactions between various system components when required, for example, Kafka.

4. **Security Software:**
   Software for malware and antivirus protection for client and server systems. Mechanisms for access control to safeguard important data and avoid illegal access. Encryption mechanism to be used: SSL (Secure Sockets Layer).

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5. **Backup and Recovery Software:**
   A backup method is used to ensure important data is regularly backed up and protected in case of system breakdown. Disaster recovery methods ensure that in the event of a major incident, business operations continue.

6. **Compliance and Regulatory Software:**
   Compliance management software is essential for ensuring compliance with legal standards like GDPR and PCI DSS (Payment Card Industry Data Security Standard) especially in reference to sensitive nature of guest data.

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Future Growth, Costs and Benefits

Future Growth:

1. **Scalability:** As the Grand Hotels group expands its operations or adds new properties, the GHS software can easily scale to accommodate the growing needs without significant disruptions.
2. **Adaptability:** The modular design of GHS allows for flexibility in integrating new features or functionalities in response to evolving industry trends or customer preferences.
3. **Global Reach:** With the potential to be implemented across various locations, GHS can facilitate the Grand Hotels group's international expansion plans, enabling consistent and standardized operations across diverse markets.

Costs:

1. **Initial Investment:** Developing and implementing the GHS software will involve significant upfront costs related to software development, customization, and training for staff members.
2. **Maintenance:** Ongoing maintenance costs, including updates, patches, and technical support, will be necessary to ensure the continued smooth functioning of the software.
3. **Integration Costs:** Depending on the existing infrastructure and systems within each property, there may be additional costs associated with integrating GHS with other software or hardware solutions.

Benefits:

1. **Operational Efficiency:** GHS streamlines various operational aspects such as reservations, inventory management, and personnel management, leading to improved efficiency and productivity.
2. **Enhanced Customer Experience:** By enabling real-time updates and personalized interactions, GHS enhances the overall guest experience, leading to higher satisfaction levels and increased repeat business.
3. **Data-Driven Decision Making:** GHS provides comprehensive data analytics and reporting functionalities, empowering hotel management to make informed decisions based on real-time insights, market trends, and guest feedback.
4. **Cost Savings:** Through automation and centralized control, GHS helps reduce labour costs, minimize errors, and optimize resource utilization, resulting in overall cost savings for the Grand Hotels group.
5. **Competitive Advantage:** By offering seamless operations and superior service quality, GHS can help the Grand Hotels group differentiate itself from competitors and maintain its position as a leader in the hospitality industry.

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Project Scope

Need: The Grand Hotel, Mysuru (Mysore), requires hotel accounting management software to substitute its previous way of storing accounting records and information.

Scope: The Grand Hospitality Suite project is an application software that will incorporate the accounting needs of the Grand Hotel, connecting several departments under a single framework so that the collective operations can be monitored by the authorized personnel in a centralized manner. The employees will be able to enter and view the necessary data according to their assigned designation and view.

Deliverables:

- A fully functional application with the capability of entering, storing, and displaying hotel accounts, connecting all the hotel departments.
- Separate admin and employee login credentials and profile to ensure data security and integrity.
- Links to generate an analysis and financial statement reports for the hotel business.

Exclusions:

- Initial Financial data will be provided by the designated departments of the hotel. The software's functionality is to further store, process and display that data.
- Costs or damages resulting from natural disasters and unforeseen events.
- Any activity, changes or enhancements done which are beyond the agreed upon scope or any involvement of an external third party.

Assumptions: It is assumed that The Grand Hotel, Mysuru (Mysore) already has the hotel financial data which is up to date. This data will only be migrated to the Grand Hospitality Suite as per the agreed upon terms.

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Considerations in Project Management

Training:

Provide comprehensive training to hotel staff on how to use the GHS software, including basic functions and specialized features relevant to the hospitality industry. Offer advanced training sessions for staff responsible for financial reporting and analysis. Additionally, provide refresher courses and online resources to support continuous learning and skill development. Encourage staff to share tips and best practices to enhance their understanding and utilization of the software.

Standard Procedures:

Establish standard operating procedures (SOPs) for using GHS. This includes guidelines for data entry, reconciliation, reporting, and troubleshooting. Regularly review and update SOPs to incorporate feedback from staff and changes in software functionality. Conduct regular audits to ensure adherence to SOPs and identify areas for improvement.

Data Security:

Implement robust data security measures for GHS, including regular backups, encryption, and access controls, to protect sensitive financial information. Conduct regular security assessments and penetration testing to identify and mitigate potential vulnerabilities. Provide training to staff on data security best practices and procedures to prevent data breaches and unauthorized access.

Monitoring and Auditing:

Regularly monitor the use of GHS to ensure compliance with SOPs and identify any issues or discrepancies. Conduct regular audits to verify the accuracy and integrity of financial data. Use audit findings to improve processes and address potential areas of risk. Implement automated monitoring tools to track system performance and identify potential issues proactively.

Integration:

Ensure that GHS integrates smoothly with other systems used in the hotel, such as reservation management, inventory control, and CRM systems. Establish data exchange protocols and conduct regular testing to ensure seamless communication between systems. Provide training to staff on how to effectively use integrated systems to streamline operations and improve efficiency.

Software Updates:

Keep GHS up to date with the latest updates and patches to ensure it remains secure and functional. Develop a schedule for regular software updates and communicate this schedule to relevant staff to minimize disruption to operations. Test updates in a controlled environment before deploying them to production to ensure compatibility with existing systems.

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User Support:

Provide ongoing user support for GHS, including troubleshooting issues, answering questions, and providing additional training as needed. Establish a help desk or support team to assist users with software-related issues and ensure timely resolution of problems. Encourage staff to provide feedback on the software and support services to identify areas for improvement.

Performance Monitoring:

Monitor the performance of GHS to identify any bottlenecks or areas for improvement. Use performance data to optimize system configuration and improve overall efficiency. Conduct regular reviews with staff to discuss system performance and identify opportunities for enhancement.

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Feasibility

After an analysis and understanding of the current infrastructure of The Grand Hotel, Mysuru (Mysore), the feasibility study of this project has been conducted.

Technical feasibility: The software is customizable and can be altered according to the needs of the client business. The current and future accounting needs of the hotel can be integrated into the software in a seamless manner. This new accounting system is compatible with the current hardware and software technologies existing in the hotel. Also, the software is scalable enough to accommodate hotel chain expansion and future transaction volume to a greater extent. Technical expertise will be acquired in the training program. Also, laws related to Customer Data protection and security concerns will be adhered to, under the guidance of an experienced legal advisor.

Operational feasibility: Proper training and support will be provided to the existing hotel staff to make the process of transition easier and as smooth as possible. This training will be provided by the vendor itself to ensure that there is no hinderance in its working later. The system is stable and efficient as it can integrate with the exiting hotel software systems, like point of sale (POS), revenue management system, property management system (PMS), etc. However, there will be a slight reduction in staff, who will be shifted to other departments and branches, without causing any disruption to the working of the hotel. Overall, the implementation of new accounting software is supported by the management.

Economic feasibility: According to the costs and benefits analysis, it is imperative that the hotel accounting software project profits will outweigh its costs in the future, if implemented effectively and efficiently. The prohibitive costs which were earlier evident in maintaining physical storage for most of the accounting records, such as files, books, reports, etc., are now being substituted by the customizable computer software. Reduction in staff to maintain such records also results in an economically feasible option.

Schedule feasibility: A firm timetable is established to ensure that the project can be completed well within the critical time frame. Certain project management techniques, such as Gantt charts, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), prototyping, etc., will be followed to ensure that workflow is achieved properly. In addition to this, an experienced project manager will be appointed for the smooth functioning of the project and successful completion.

Overall, the introduction of the new hotel accounting software (Grand Hospitality Suite) is a feasible option for The Grand Hotel, Mysuru (Mysore) to adopt after considering several distinct aspects for the same.

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Cost Time Estimation

The cost and time estimate for constructing the Grand Hospitality Suite (GHS) software solution would be determined by a variety of criteria, including feature complexity, technology stack, development team size, and project management strategy. This is a preliminary estimate:

Requirement Analysis and Planning:

Time: 2-3 weeks

Cost: ₹900,000 - ₹1,300,000

UI/UX Design:

Time: 3-6 weeks

Cost: ₹1,300,000 - ₹1,800,000

Backend Development:

Time: 10-14 weeks

Cost: ₹5,000,000 - ₹7,000,000

Frontend Development:

Time: 6-10 weeks

Cost: ₹2,500,000 - ₹3,500,000

Integration of Modules:

Time: 3-6 weeks

Cost: ₹1,200,000 - ₹1,600,000

Testing and Quality Assurance:

Time: 5-7 weeks

Cost: ₹1,800,000 - ₹2,200,000

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Deployment and Implementation:

Time: 2-3 weeks

Cost: ₹900,000 - ₹1,300,000

Training and Support:

Cost: Varies based on requirements

Total Estimated Cost: ₹19,600,000 - ₹22,452,000

Total Estimated Time: 28 weeks

These estimates are only estimates and may change depending on unique project requirements, customization demands, development team rates, and unexpected obstacles during the development process.

Monthly Distribution for the Cost Estimates:

Project Cost Elements	Mar-24	Apr-24	May-24	Jun-24	Total Till June
Requirement Analysis & Planning	₹ 460,000.00	₹ 408,000.00	₹ 0.00	₹ 0.00	₹ 868,000.00
UI/UX Design	₹ 660,000.00	₹ 788,000.00	₹ 0.00	₹ 0.00	₹ 1,448,000.00
Backend Development	₹ 0.00	₹ 0.00	₹ 1,120,000.00	₹ 2,400,000.00	₹ 3,520,000.00
Frontend Development	₹ 0.00	₹ 0.00	₹ 960,000.00	₹ 700,000.00	₹ 1,660,000.00
Integration of Modules	₹ 0.00	₹ 0.00	₹ 0.00	₹ 320,000.00	₹ 320,000.00
Testing and Quality Assurance	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00
Deployment and Implementation	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00
Salaries	₹ 500,000.00	₹ 500,000.00	₹ 500,000.00	₹ 500,000.00	₹ 2,000,000.00
Total Project Cost	**₹ 1,620,000.00**	**₹ 1,696,000.00**	**₹ 2,580,000.00**	**₹ 3,920,000.00**	**₹ 9,816,000.00**

Project Cost Elements	Jul-24	Aug-24	Sep-24	Total Till September
Requirement Analysis & Planning	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00
UI/UX Design	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00
Backend Development	₹ 1,120,000.00	₹ 1,920,000.00	₹ 2,000,000.00	₹ 5,040,000.00
Frontend Development	₹ 560,000.00	₹ 560,000.00	₹ 700,000.00	₹ 1,820,000.00
Integration of Modules	₹ 256,000.00	₹ 256,000.00	₹ 320,000.00	₹ 832,000.00
Testing and Quality Assurance	₹ 652,000.00	₹ 552,000.00	₹ 840,000.00	₹ 2,044,000.00
Deployment and Implementation	₹ 0.00	₹ 0.00	₹ 1,400,000.00	₹ 1,400,000.00
Salaries	₹ 500,000.00	₹ 500,000.00	₹ 500,000.00	₹ 1,500,000.00
Total Project Cost	**₹ 3,088,000.00**	**₹ 3,788,000.00**	**₹ 5,760,000.00**	**₹ 12,636,000.00**

Project Cost Elements	Total Overall
Requirement Analysis & Planning	₹ 868,000.00
UI/UX Design	₹ 1,448,000.00
Backend Development	₹ 8,560,000.00
Frontend Development	₹ 3,480,000.00
Integration of Modules	₹ 1,152,000.00
Testing and Quality Assurance	₹ 2,044,000.00
Deployment and Implementation	₹ 1,400,000.00
Salaries	₹ 3,500,000.00
Total Project Cost	**₹ 22,452,000.00**

Fact Finding Techniques

Requirement Gathering:

Utilize interviews, surveys, and observation to gather detailed requirements from hotel management and staff.

Use Case Analysis:

Identify and document various use cases of the software to understand system interactions and stakeholder requirements.

Prototyping:

Develop prototypes and wireframes to visualize the user interface and gather feedback, iterating based on stakeholder input.

Agile Development:

Implement agile methodologies like Scrum or Kanban for iterative development, with regular sprint planning, review, and retrospective meetings.

Test-Driven Development (TDD):

Adopt TDD practices by writing automated tests before coding to define functionality and ensure continuous validation.

Continuous Integration and Deployment (CI/CD):

Establish CI/CD pipelines for automated build, test, and deployment processes, ensuring controlled and efficient updates.

User Acceptance Testing (UAT):

Involve end-users in UAT sessions to validate software meets requirements, addressing feedback before final deployment.

Change Management:

Implement a formal change management process for requesting, reviewing, approving, and implementing changes to the software.

Risk Management:

Identify potential risks and develop mitigation strategies to minimize impact on project schedule, budget, and scope.

Documentation:

Maintain comprehensive documentation including requirements, design specifications, test plans, and user manuals, ensuring accessibility to all stakeholders.

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Critical Path Method

Requirement Analysis and Planning (2-3 weeks): During this stage, the project team gathers and analyses requirements from stakeholders. This includes identifying the needs and objectives of the software, as well as defining the scope, budget, and timeline for the project. The outcome is a detailed project plan that serves as a roadmap for the entire project.

UI/UX Design (3-6 weeks): The UI/UX design stage focuses on creating a user-friendly and visually appealing interface for the software. Designers work on wireframes, mock-ups, and prototypes to define the layout, navigation, and overall user experience. This stage involves close collaboration with stakeholders to ensure the design meets their expectations and the project requirements.

Backend Development (10-14 weeks): Backend development involves building the core functionality of the software, including the database design, server-side logic, and integration with external systems. Developers use programming languages and frameworks to implement the backend architecture based on the requirements defined in earlier stages. This stage also includes setting up the necessary infrastructure for hosting and deployment.

Frontend Development (6-10 weeks): Frontend development focuses on implementing the user interface components of the software. Developers use technologies such as HTML, CSS, and JavaScript to create the visual elements that users interact with. This stage involves translating the UI/UX design into code and ensuring that the frontend is responsive and accessible across different devices and browsers.

Integration of Modules (3-6 weeks): Once the backend and frontend components are developed, they need to be integrated to ensure that they work together seamlessly. This stage involves testing the integration points between different modules of the software and addressing any issues that arise. It also includes implementing communication protocols and data exchange mechanisms between the frontend and backend systems.

Testing and Quality Assurance (5-7 weeks): The testing stage is crucial for identifying and fixing any bugs or issues in the software. Testers perform various types of testing, including functional testing, performance testing, and usability testing, to ensure that the software meets quality standards. This stage also includes implementing feedback from stakeholders and making any necessary adjustments to improve the software's quality.

Deployment and Implementation (2-3 weeks): The final stage involves deploying the software and implementing it in the hotel's operations. This includes configuring the software for the hotel's specific requirements, training users on how to use the software, and ensuring a smooth transition to the new system. This stage also includes post-deployment support to address any issues that arise during the initial rollout of the software.

Vaibhav Datta (300206527)

Methods used to monitor the project and controlling different techniques.

Here are some points that we will be focusing on primarily for monitoring and controlling the deadlines and different milestones during the GHS project for the Grand Hotels Mysore:

1. Work Breakdown Structure (WBS):

- Development of a detailed WBS that breaks down the project into manageable tasks, such as design, procurement, construction, and interior decoration.
- Assigning each task to specific team members or departments who are responsible for its execution.
- Regular review of the WBS to ensure all tasks are being completed as planned.

2. Gantt Chart:

- Creation of a Gantt chart that visually represents the project timeline, including start and end dates for each task.
- Inclusion of dependencies between tasks to identify critical paths and potential bottlenecks.
- Updating the Gantt chart regularly to track progress and to adjust the schedules as needed.

3. Milestone Tracking:

- Identifying key milestones in the project, such as completion of architectural drawings, procurement of materials, and installation of fixtures.
- Monitoring progress towards each milestone to ensure timely completion.
- Celebrating achievements when milestones are reached to boost morale and motivation.

4. Resource Management:

- Allocating resources efficiently to ensure tasks are completed on schedule and within budget.
- Monitoring resource usage and adjusting allocations as needed to address any shortages or overages.
- Anticipating resource needs for future phases of the project and work accordingly.

5. Budget Tracking:

- Establishing a detailed budget for the project, including costs for materials, labour, and other expenses.
- Tracking expenditures against the budget to ensure spending stays within approved limits.
- Implementing cost-saving measures wherever possible without compromising quality or safety.

Vaibhav Datta (300206527)

6. Quality Control Inspections:

- Conducting regular inspections to ensure that work meets quality standards and specifications.
- Using checklists and inspection criteria to systematically evaluate the quality of materials, workmanship, and installations.
- Addressing any deficiencies promptly to maintain quality and avoid rework.

7. Risk Management:

- Identifying potential risks to the project, such as delays in material delivery, changes in regulatory requirements, or unforeseen site conditions.
- Developing risk mitigation strategies to minimize the impact of identified risks.
- Monitoring the project environment for new risks and adjusting mitigation plans as needed.

8. Communication Plan:

- Establishing a communication plan that outlines how project information will be shared among team members, stakeholders, and other relevant parties.
- Holding regular meetings to discuss project status, address concerns, and coordinate activities.
- Using communication tools such as email, project management software, and progress reports to keep stakeholders informed.

9. Change Management:

- Implementing a formal change management process to evaluate and approve proposed changes to the project scope, schedule, or budget.
- Documenting change requests and assessing their impact on project objectives.
- Obtaining approval from appropriate stakeholders before implementing changes.

10. Lessons Learned:

- Documenting lessons learned throughout the project, including successes, challenges, and areas for improvement.
- Conducting a post-project review to identify what worked well and what could be done differently in future projects.
- Sharing lessons learned with relevant stakeholders to promote continuous improvement.

Vaibhav Datta (300206527)

Reporting

Regular Reporting:

The team members submit status reports regularly to the project manager, who makes an organized reporting structure. The data is then compiled by the project manager to update the users and higher management. Regular meetings should be planned in a manner that progress and problems are discussed.

Project Status Meeting:

During scheduled meetings, team members discuss common problems, share informative knowledge, and explore various new methods. The project manager organizes brainstorming sessions and seeks evaluation during these meetings. Project managers must keep checking that every relevant information is shared, discussed, and addressed properly.

Hence, for a particular sprint of 3 weeks, after each week a status meeting will be held to ensure that all the short-term objectives are reached, problems handled and deviations, if any, are taken care of under the guidance of project manager.

Project Status Reports:

Written reports to users and upper management are necessary from project managers. Many graphical representations like the Gantt Chart should also be used in these reports to illustrate the current situation of the project. These reports need to be clear and emphasize significant success, difficulties, and upcoming milestones.

Handling Issues:

A balanced strategy is crucial to solve difficulties efficiently. The queries including technical issues, delays in schedules, and excessive costs should be expressed by the project manager to upper management without any hesitation. Instead of waiting for issues to get out of hand, it is more beneficial to make errors on the cautious side and alert the management immediately.

Hence, during the production and development process and when the deliverables are tested, the glitches and issues are properly documented by the team to be worked upon and which can be referenced to in the future sprints, increasing consistency and efficiency.

Vaibhav Datta (300206527)

Impact Analysis

1. User Experience:

Positive Impact: With GHS, consumers can book rooms and manage their reservations more easily and conveniently.

Potential Negative Impact: Getting used to the new features and interface of the system could be difficult for users at first.

2. Revenue:

Positive Impact: Revenue growth from new bookings and repeat business is a real possibility if GHS can enhance the customer service they provide and streamline their operations.

Potential Negative Impact: There may be a short-term effect on income due to installation expenses and possible downtime during the shift.

3. Operations:

Positive Impact: GHS centralizes management tasks, reducing manual errors and streamlining operations such as inventory management and staff scheduling.

Potential Negative Impact: There may be brief interruptions to operations during the transition period if there are integration problems with existing systems.

4. Technology:

Positive Impact: GHS introduces modern technology solutions for hospitality management, enhancing scalability and adaptability for future growth.

Potential Negative Impact: Upgrading or replacing existing technology infrastructure to support GHS may require significant investment and downtime for implementation.

5. Compliance:

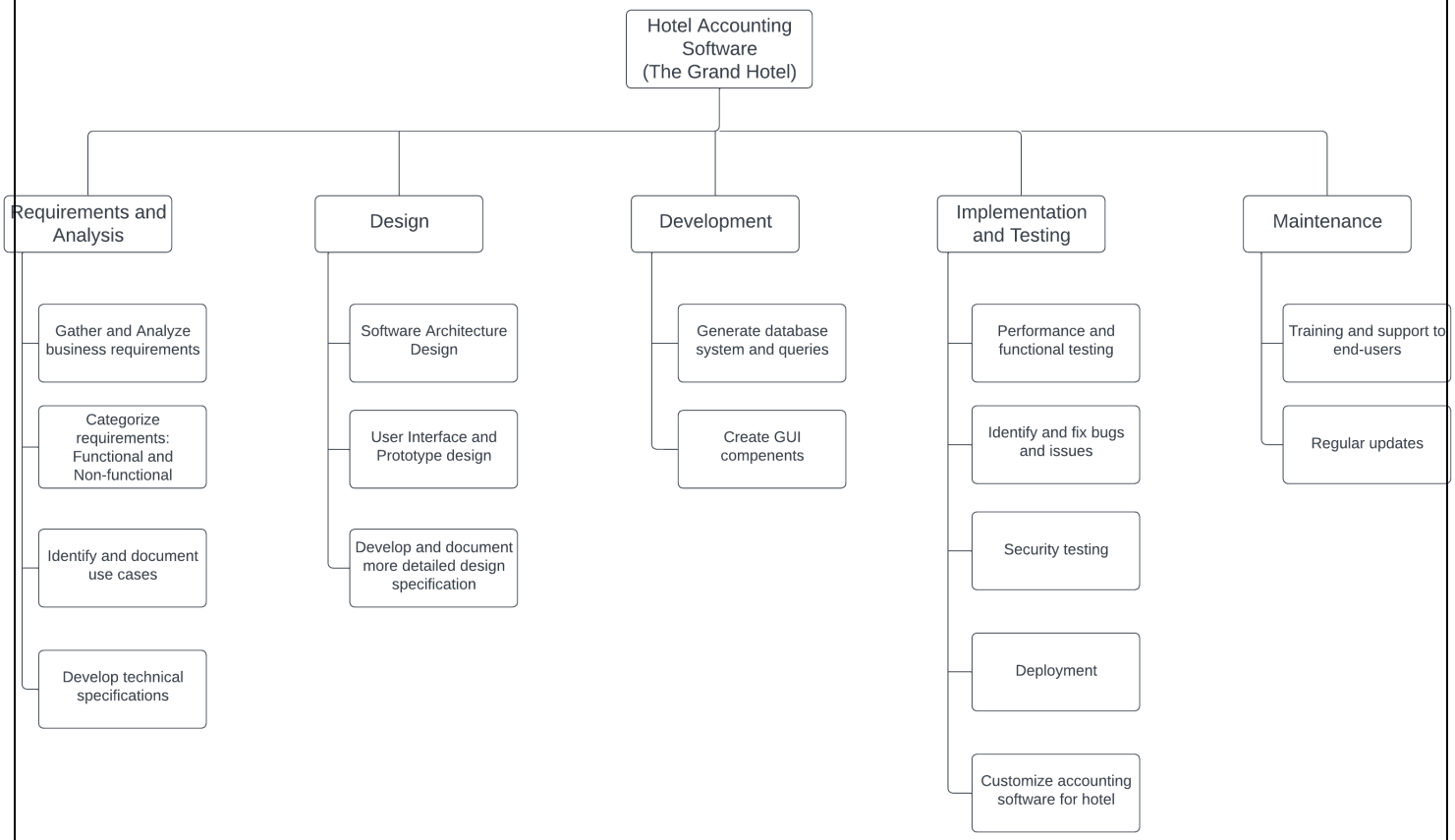
Positive Impact: GHS incorporates compliance features to ensure adherence to regulations regarding data privacy, financial transactions, and customer information.

Potential Negative Impact: Changes in compliance requirements or regulations may necessitate updates to the system, leading to additional costs and adjustments.

Better user experience, more money, easier operations, better technology, and stronger compliance measures are all things that may be expected when the Grand Hospitality Suite (GHS) is put into place. To achieve successful adoption throughout The Grand Hotels group and minimize any negative repercussions, it is vital to plan, communicate effectively, and proactively handle transitional problems.

Vaibhav Datta (300206527)

Work Breakdown Structure



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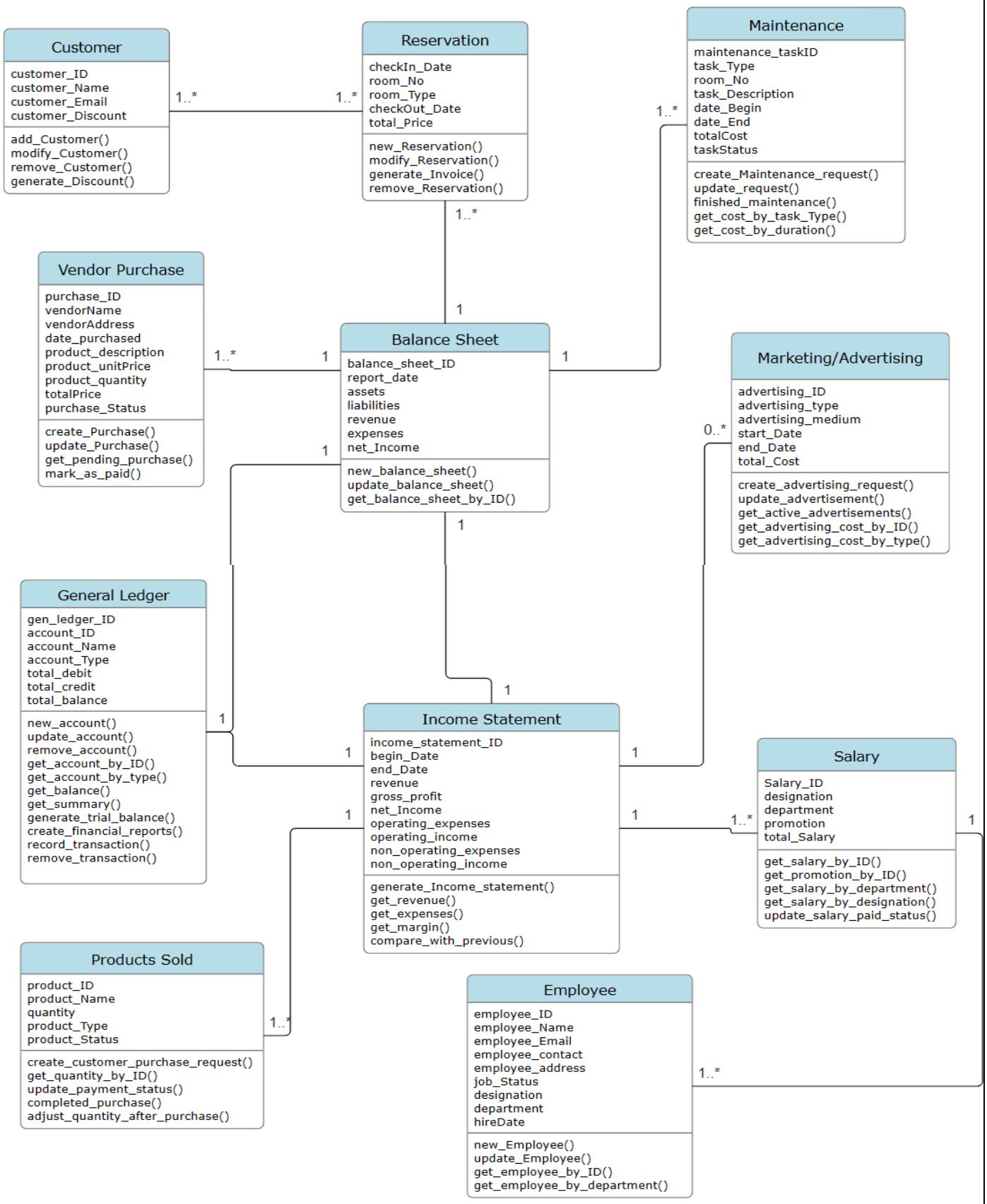
Class Diagram

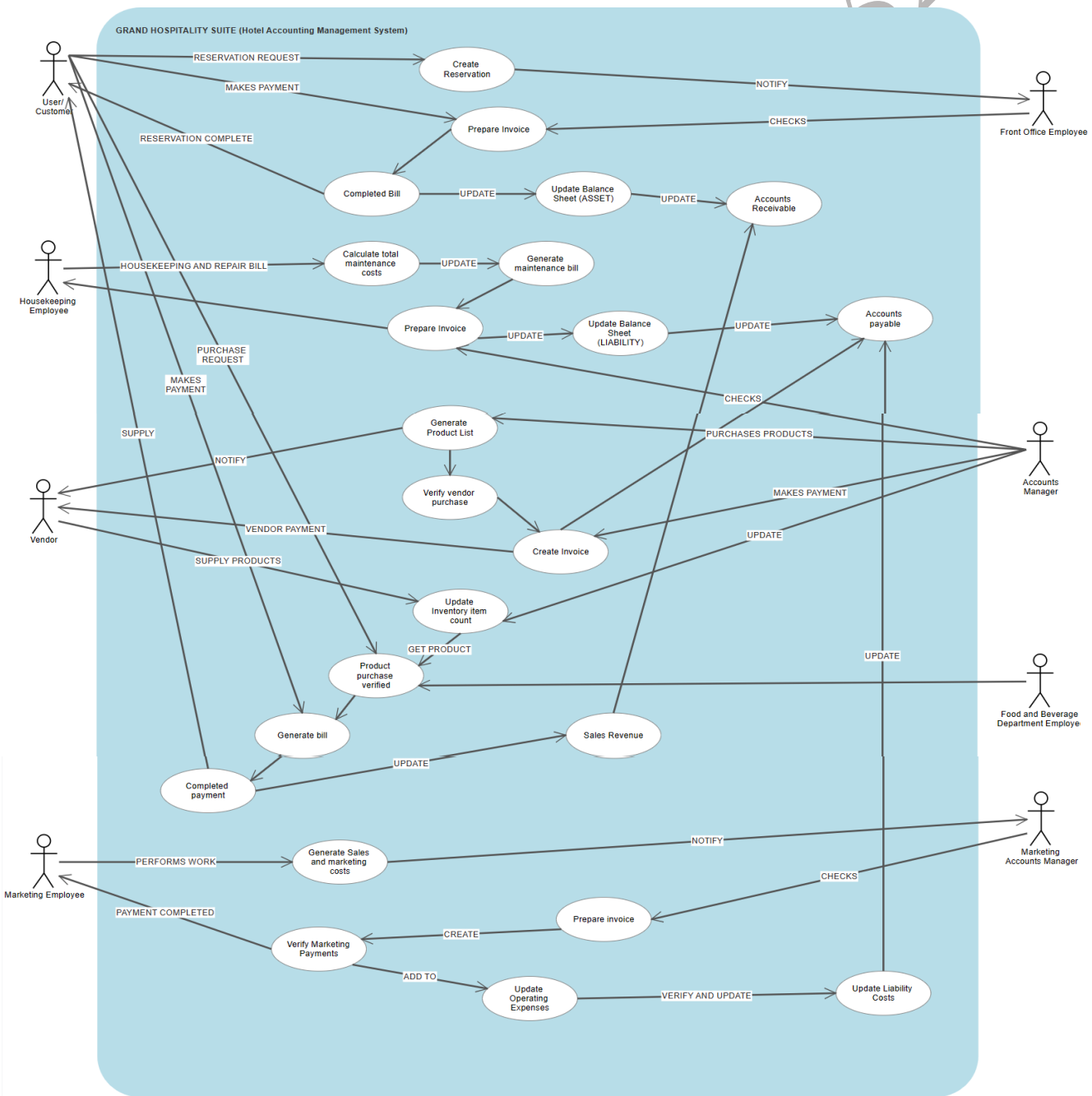


Use Case Diagram

Use Case Diagram 1:

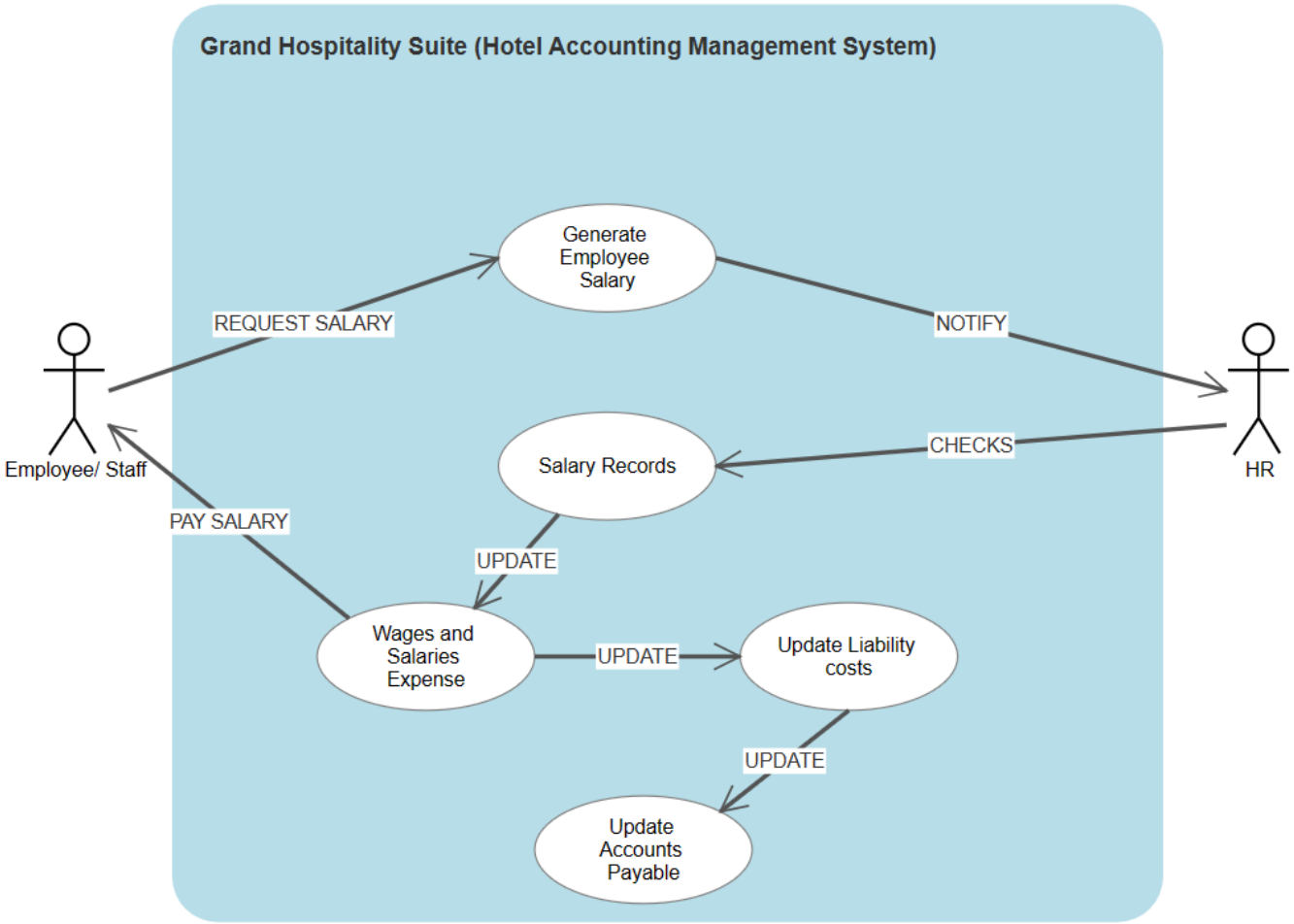
This use case diagram describes the actors involved in the flow of information between various processes in the hotel accounting system. The diagram includes three components:

- **Actors** (stick figures): User/Consumer, Front Office Employee, Housekeeping employee, vendor, marketing employee, accounts manager, food and beverage department employee and marketing accounts manager.
- **Use Cases** (oval shapes): describes the objectives of actors.
- **Relationships:** these are the lines between actors and use cases defining the connection between them.



Use Case Diagram 2:

This use case depicts the salary pay out system between the employee and HR (actors). The employee requests salary from the company which is checked and paid through the HR. In the end, the salary pay-outs are noted under accounts payable.



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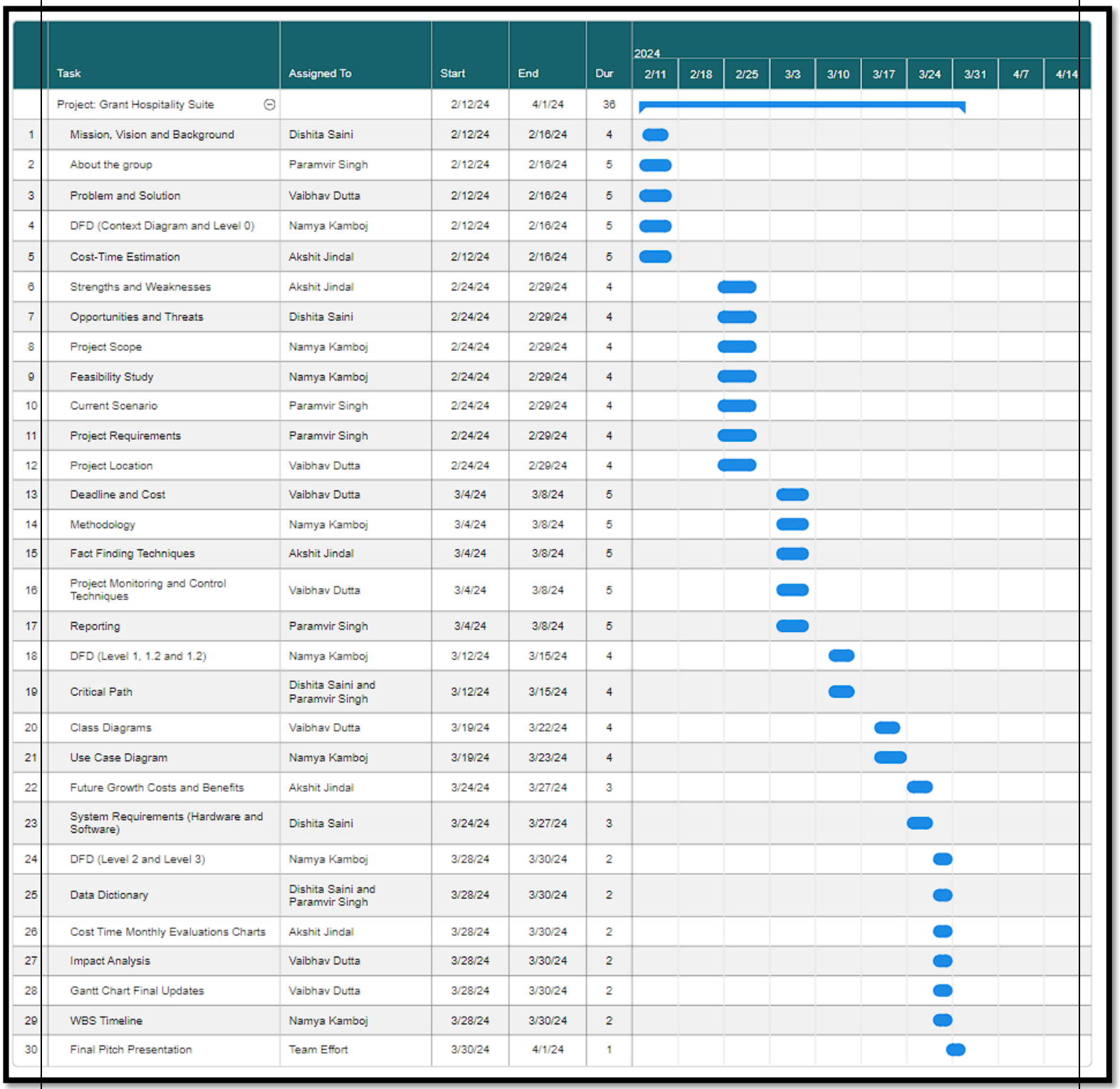
Gantt Chart

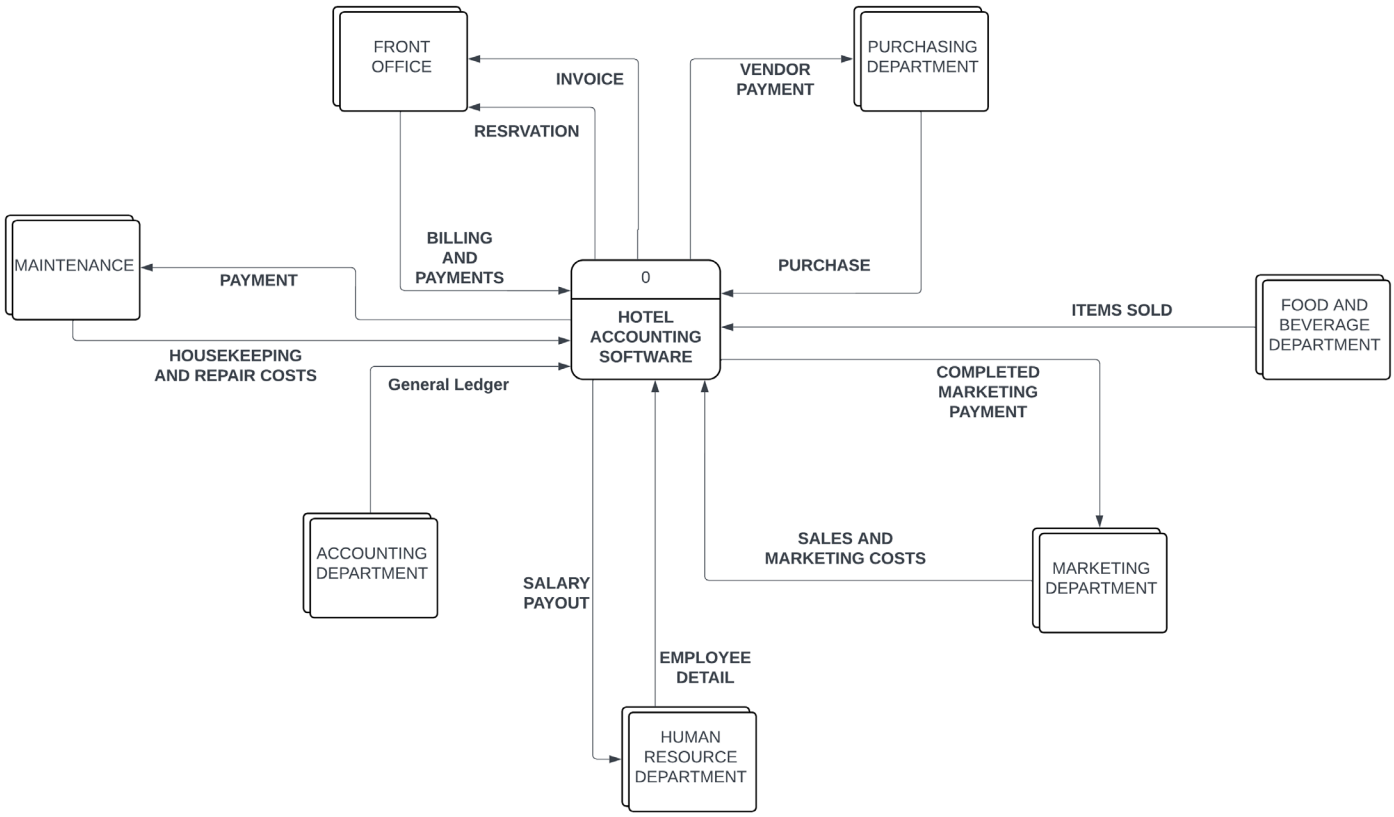


	Task	Assigned To	Start	End	Dur
	Project: Grant Hospitality Suite		2/12/24	4/1/24	36
1	Mission, Vision and Background	Dishita Saini	2/12/24	2/16/24	4
2	About the group	Paramvir Singh	2/12/24	2/16/24	5
3	Problem and Solution	Vaibhav Dutta	2/12/24	2/16/24	5
4	DFD (Context Diagram and Level 0)	Namya Kamboj	2/12/24	2/16/24	5
5	Cost-Time Estimation	Akshit Jindal	2/12/24	2/16/24	5
6	Strengths and Weaknesses	Akshit Jindal	2/24/24	2/29/24	4
7	Opportunities and Threats	Dishita Saini	2/24/24	2/29/24	4
8	Project Scope	Namya Kamboj	2/24/24	2/29/24	4
9	Feasibility Study	Namya Kamboj	2/24/24	2/29/24	4
10	Current Scenario	Paramvir Singh	2/24/24	2/29/24	4
11	Project Requirements	Paramvir Singh	2/24/24	2/29/24	4
12	Project Location	Vaibhav Dutta	2/24/24	2/29/24	4
13	Deadline and Cost	Vaibhav Dutta	3/4/24	3/8/24	5
14	Methodology	Namya Kamboj	3/4/24	3/8/24	5
15	Fact Finding Techniques	Akshit Jindal	3/4/24	3/8/24	5
16	Project Monitoring and Control Techniques	Vaibhav Dutta	3/4/24	3/8/24	5
17	Reporting	Paramvir Singh	3/4/24	3/8/24	5
18	DFD (Level 1, 1.2 and 1.2)	Namya Kamboj	3/12/24	3/15/24	4
19	Critical Path	Dishita Saini and Paramvir Singh	3/12/24	3/15/24	4
20	Class Diagrams	Vaibhav Dutta	3/19/24	3/22/24	4
21	Use Case Diagram	Namya Kamboj	3/19/24	3/23/24	4
22	Future Growth Costs and Benefits	Akshit Jindal	3/24/24	3/27/24	3
23	System Requirements (Hardware and Software)	Dishita Saini	3/24/24	3/27/24	3
24	DFD (Level 2 and Level 3)	Namya Kamboj	3/28/24	3/30/24	2
25	Data Dictionary	Dishita Saini and Paramvir Singh	3/28/24	3/30/24	2
26	Cost Time Monthly Evaluations Charts	Akshit Jindal	3/28/24	3/30/24	2
27	Impact Analysis	Vaibhav Dutta	3/28/24	3/30/24	2
28	Gantt Chart Final Updates	Vaibhav Dutta	3/28/24	3/30/24	2
29	WBS Timeline	Namya Kamboj	3/28/24	3/30/24	2
30	Final Pitch Presentation	Team Effort	3/30/24	4/1/24	1

Data Flow Diagram (DFD)

Hotel Accounting Software

This is a context diagram of our Hotel Accounting Software which displays an overview of the main process, entities, and data flow of the system.



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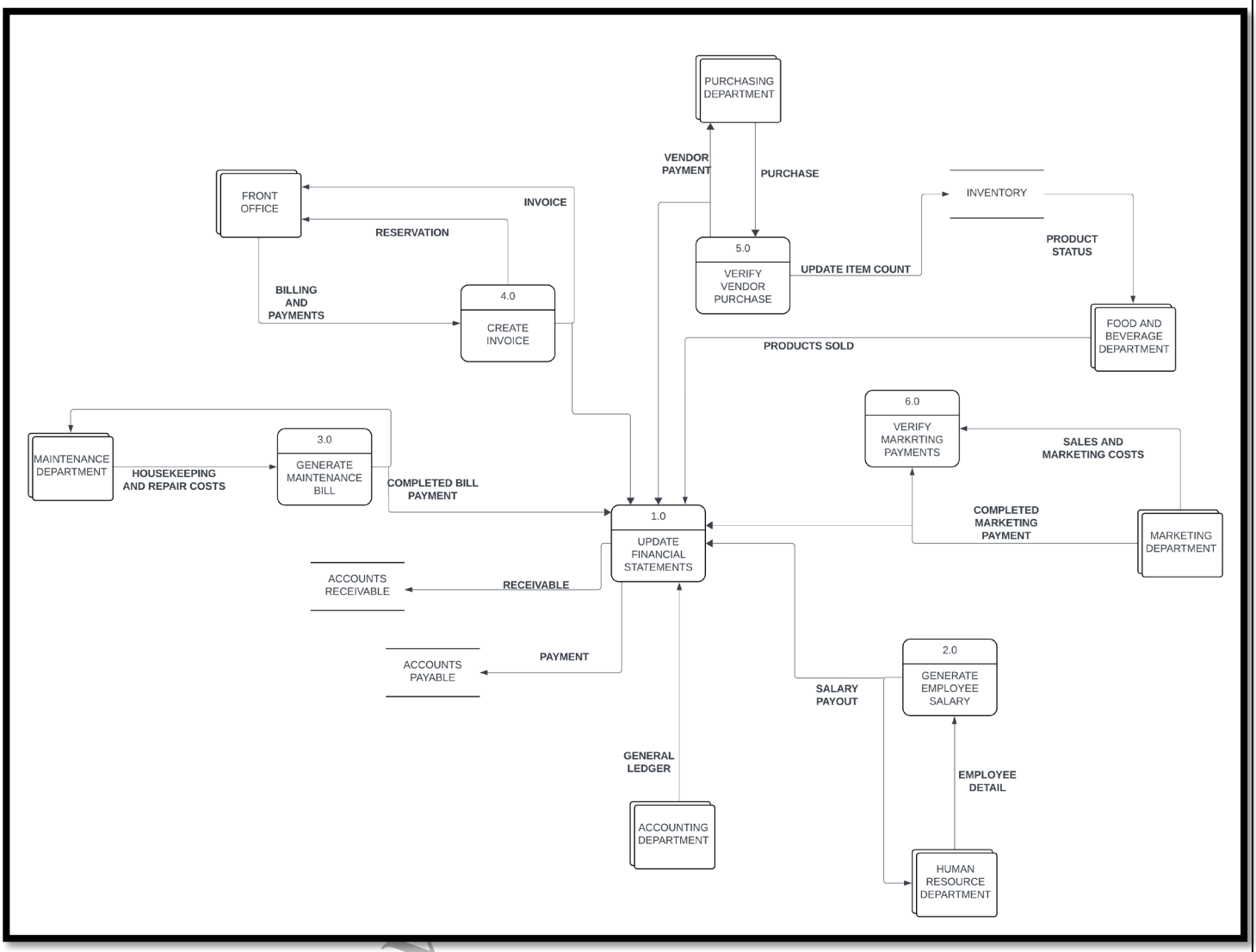
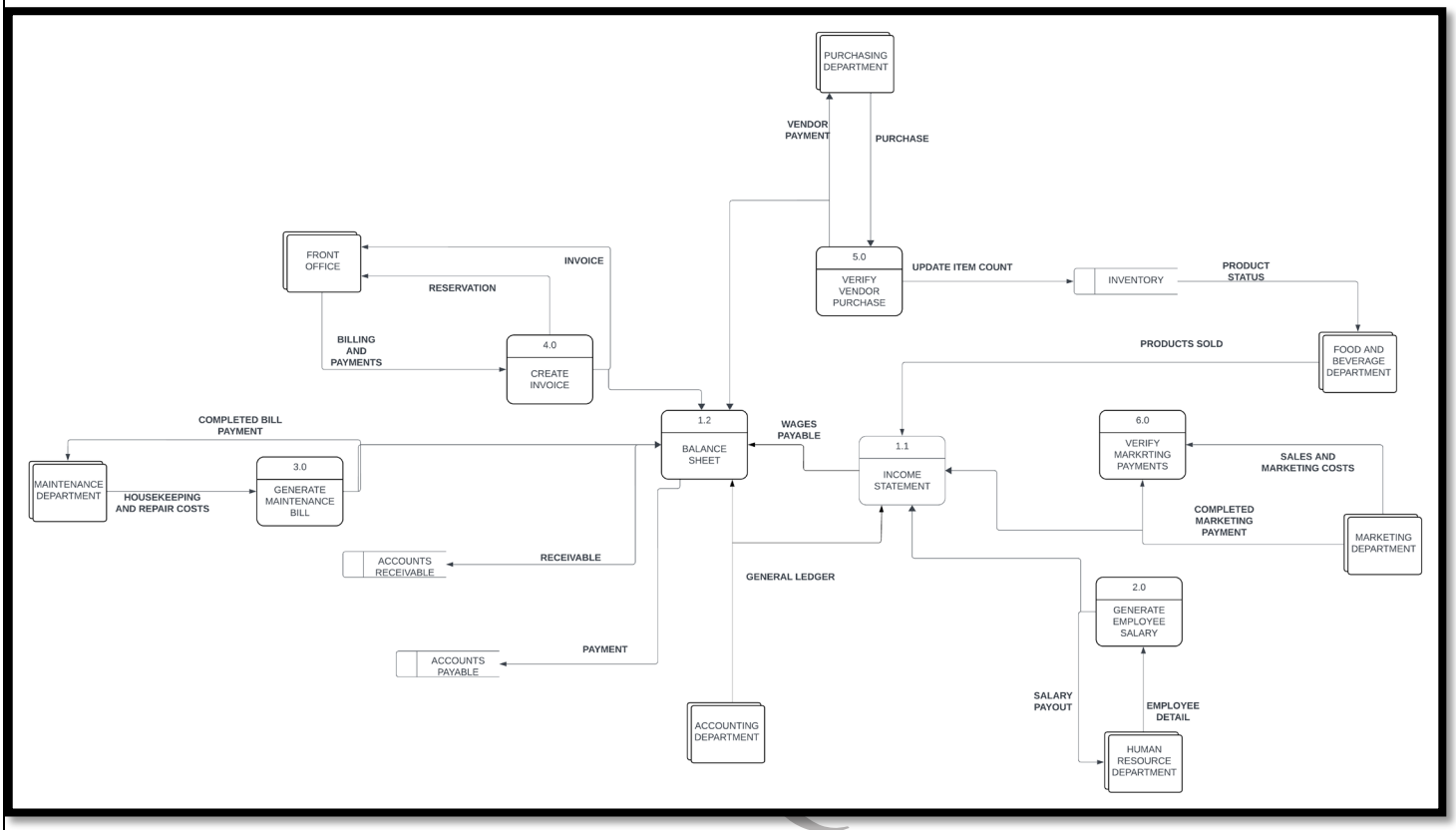
DFD (Level 0)



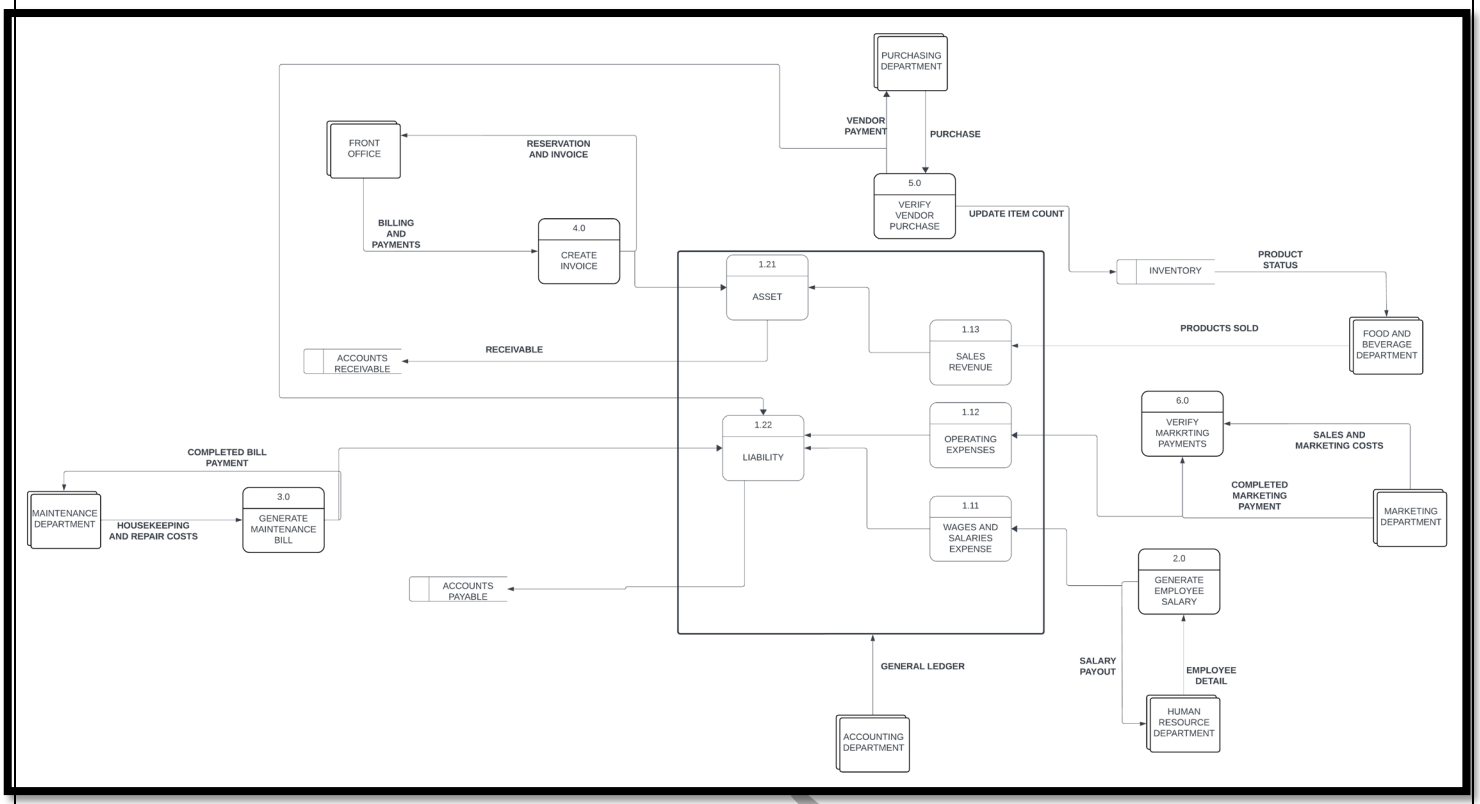
Vaibhav

DFD (Level 1)



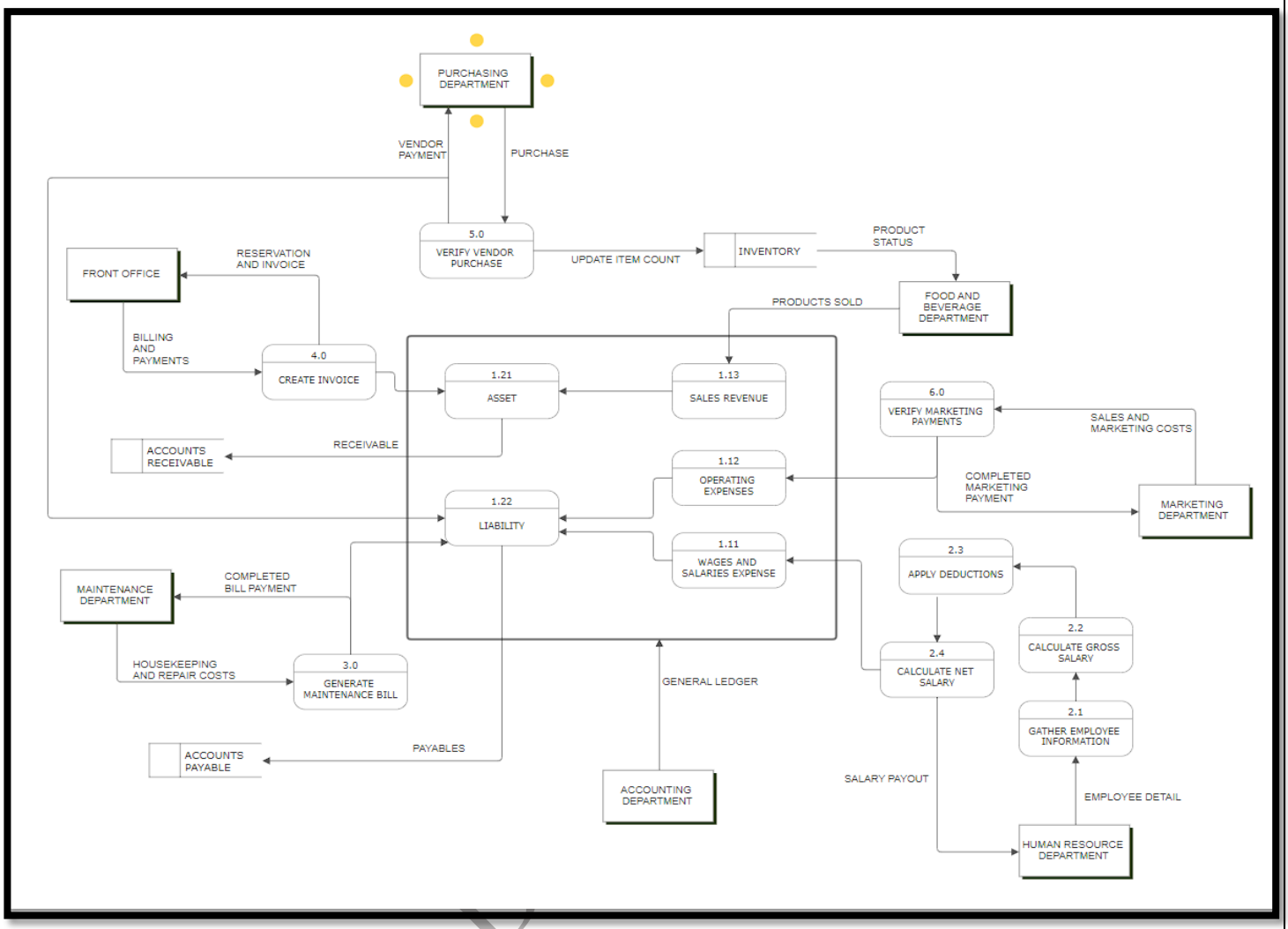
Vaibhav Datta

DFD (Level 1.1 and 1.2)



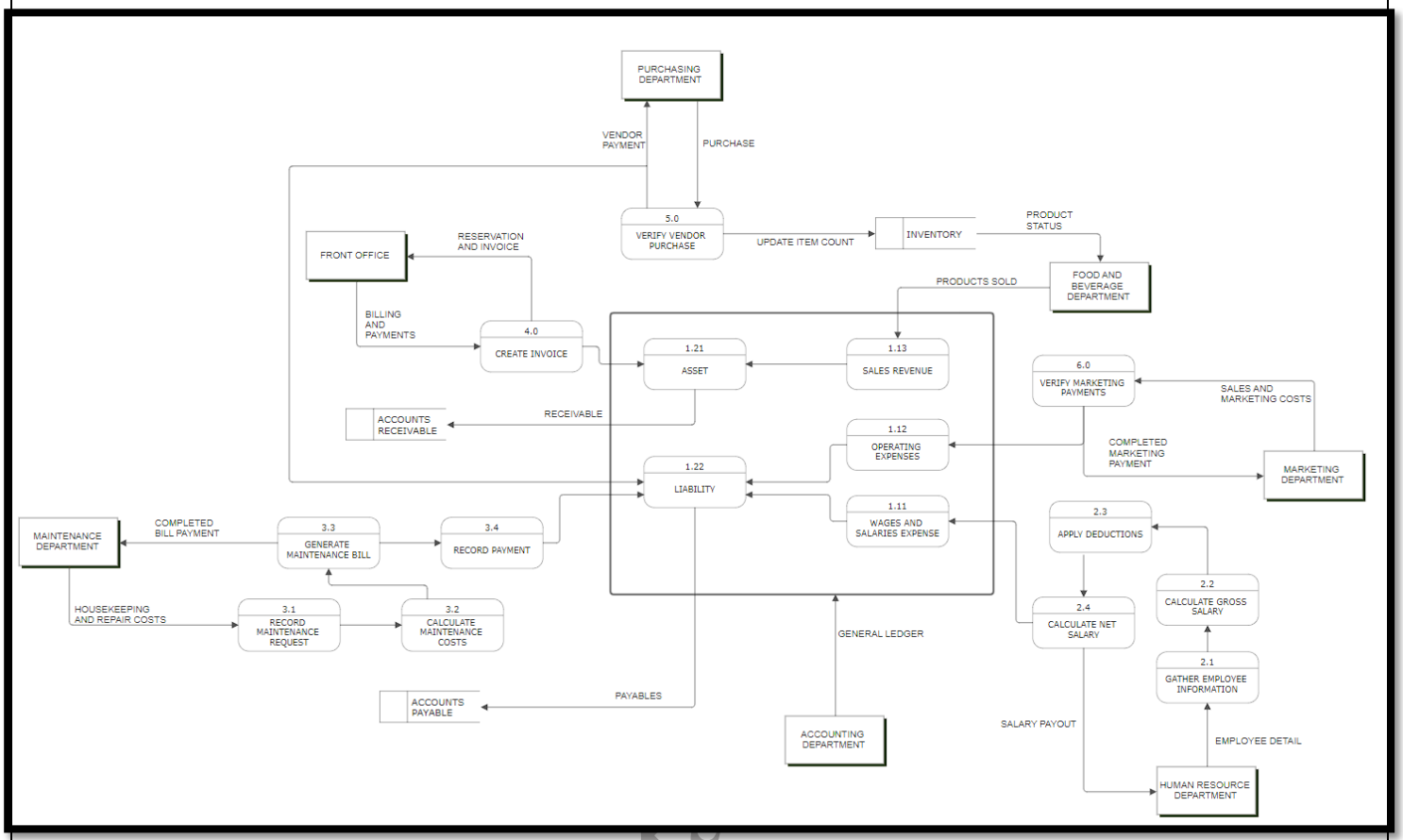
Vaibhav Datta

DFD (Level 2)



Vaibhav D

DFD (Level 3)



Vaibhav Datta

Data Dictionary

S.No	Entity Name	Column Name	Data Types	Length	Primary	Nullable	Unique
1	**Customer**	customer_ID	int	1	YES	NO	YES
		customer_Name	varchar	50	NO	NO	YES
		customer_Email	varchar	20	YES	NO	YES
		customer_Discount	int		NO	NO	YES
2	**Reservation**	checkIn_Date	date	10	NO	NO	NO
		room_No	int	4	YES	NO	YES
		room_Type	char	20	NO	NO	NO
		checkOut_Date	date	10	NO	NO	NO
		total_Price	int	7	NO	NO	NO
3	**Maintenance**	maintenance_ID	int	1	YES	NO	YES
		task_Type	char	10	NO	NO	NO
		room_No	int	5	NO	NO	YES
		task_Description	varchar	100	NO	NO	NO
		date_Begin	date	10	NO	NO	NO
		date_End	date	10	NO	NO	NO
		totalCost	int	7	NO	NO	NO
		taskStatus	char	20	NO	NO	NO

S.No	Entity Name	Column Name	Data Types	Length	Primary	Nullable	Unique
4	**Vendor Purchase**	purchase_ID	int	1	YES	NO	YES
		vendorName	char	50	NO	NO	YES
		vendorAddress	varchar	100	YES	NO	YES
		date_purchased	date	10	NO	NO	NO
		product_description	char	100	NO	NO	NO
		product_unitPrice	int	6	NO	NO	NO
		product_quality	varchar	50	NO	NO	NO
		totalPrice	int	7	NO	NO	NO
		purchase_Status	char	50	NO	NO	NO
5	**Balance Sheet**	balance_sheet_ID	int	1	YES	NO	YES
		report_date	date	10	NO	NO	YES
		assets	varchar	50	NO	NO	NO
		liabilities	varchar	50	NO	NO	NO
		revenue	int	7	NO	NO	NO
		expenses	int	7	NO	NO	NO
		net_Income	int	7	NO	NO	NO
6	**Marketing/Advertising**	advertising_ID	int	1	YES	NO	YES
		advertising_type	varchar	50	NO	NO	NO
		advertising_medium	varchar	50	NO	NO	NO
		start_Date	date	10	NO	NO	NO
		end_Date	date	10	NO	NO	NO
		total_Cost	int	7	NO	NO	NO

S.No	Entity Name	Column Name	Data Types	Length	Primary	Nullable	Unique
7	**General Ledger**	gen_ledger_ID	int	1	YES	NO	YES
		account_ID	int	1	YES	NO	YES
		account_Name	varchar	50	NO	NO	YES
		account_Type	varchar	20	NO	NO	NO
		total_debit	int		NO	NO	NO
		total_credit	int		NO	NO	NO
		total_balance	int		NO	NO	NO
8	**Income Statement**	income_statement_ID	int	1	YES	NO	YES
		begin_Date	date	10	NO	NO	NO
		end_Date	date	10	NO	NO	NO
		revenue	int		NO	NO	NO
		gross_profit	int		NO	NO	NO
		net_Income	int		NO	NO	NO
		operating_income	int		NO	NO	NO
		non_operating_expenses	int		NO	NO	NO
		non_operating_income	int		NO	NO	NO
9	**Salary**	Salary_ID	int	1	YES	NO	YES
		designation	char	50	NO	NO	NO
		department	char	50	NO	NO	NO
		promotion	varchar	20	NO	NO	NO
		total_Salary	int		NO	NO	NO

S.No	Entity Name	Column Name	Data Types	Length	Primary	Nullable	Unique
10	**Product Sold**	product_ID	int	1	YES	NO	YES
		product_Name	varchar	50	NO	NO	YES
		quantity	int	100	NO	NO	NO
		product_Type	varchar	50	NO	NO	NO
		product_Status	varchar	20	NO	NO	NO
11	**Employee**	employee_ID	int	1	YES	NO	YES
		employee_Name	varchar	50	NO	NO	YES
		employee_Email	varchar	20	YES	NO	YES
		employee_contact	int	10	YES	NO	YES
		employee_address	varchar	20	NO	NO	YES
		job_Status	varchar	20	NO	NO	NO
		designation	varchar	20	NO	NO	NO
		department	char	20	NO	NO	NO
		hireDate	date	10	NO	NO	NO